

WHAT IS CLAIMED IS:

1. An redundant array of independent disks (RAID), comprising N number of storage devices; wherein:

each of the storage devices comprises M number of stripes of storage blocks  
5 comprise at least P number of stripes of data blocks and Q number of continuous stripes of blank blocks, the data blocks are suitable for storing data, the blank blocks are reserved blocks, and M, P, and Q are positive integers, wherein:

$S_{i,J}$  is the  $J^{\text{th}}$  stripe of storage block in the  $i^{\text{th}}$  storage device;

$B_{i,J}$  is the  $J^{\text{th}}$  stripe of storage block in the  $i^{\text{th}}$  storage device, and which is a blank  
10 block;

wherein, I is a positive integer of  $1 \sim N$ , J is a positive integer of  $1 \sim M$ , and when  
 $S_{i,J} = B_{i,J}$ ,  $S_{i+1,J} = B_{i+1,J}$ .

2. The RAID of claim 1, wherein the stripes of the blank blocks are distributed as continuous stripes.

15 3. The RAID of claim 1, wherein the stripes of the blank blocks are distributed as a plurality of continuous stripes.

4. The RAID of claim 1, wherein a total size of the blank blocks in each storage device is equal to a size of a maximum block provided by each of the storage devices.

20 5. The RAID of claim 1, wherein a total size of the blank blocks in each storage device is greater than a size of a maximum block provided by each of the storage devices.

6. The RAID of claim 1, wherein each of the storage devices is a single physical disk.

7. The RAID of claim 1, wherein each of the storage devices is a logical disk formed by a plurality of physical disks.

8. The RAID of claim 1, wherein each of the storage devices is composed of a partial segment of a physical disk.

9. A conversion method of an redundant array of independent disks (RAID), comprising:

5 (a) providing a plurality of storage devices, wherein each of the storage devices comprises a plurality of stripes of data blocks and at least a stripe of blank blocks, and a size of each blank block is  $m$  times that of each data block, wherein  $m$

(b) partially reading continuous data blocks on a conjunction point of the blank blocks, wherein the continuous data blocks are sequentially read; and

10 (c) writing the read data blocks into one of the blank blocks and then forming a new data block in the position of the one of the blank blocks, wherein the size of the new data block is  $m$  times that of each original data block.

10. A conversion method of the RAID, further comprising :

15 (d) repeating steps (b) and (c) until the blank blocks are all filled, wherein a new stripe of data blocks is formed in the original position of the stripe of blank blocks, and a new stripe of blank blocks is formed in the original position of the read data blocks simultaneously.

11. A conversion method of an redundant array of independent disks (RAID), comprising:

20 (a) providing a plurality of storage devices, wherein each of the storage device comprises a plurality of stripes of first data blocks and at least a stripe of blank blocks, and a size of each blank block is  $m$  times that of each first data block, wherein  $m$

(b) sequentially reading one of the first data blocks on a conjunction point of the blank blocks and the first data blocks;

(c)splitting the read first data block into a plurality of second data blocks; and  
(d)writing the second data blocks into the corresponding blank blocks,  
respectively.

12. A conversion method of the RAID, further comprising :

- 5       (d) repeating steps (b) 、 (c) and (d) until the blank blocks are all filled, wherein  
multiple stripes of second data blocks is formed in the original position of the stripe of  
blank blocks, and a new stripe of blank blocks is formed in the original position of the  
read first data blocks simultaneously.